

A Snapshot of Brain and Central Nervous System Cancers

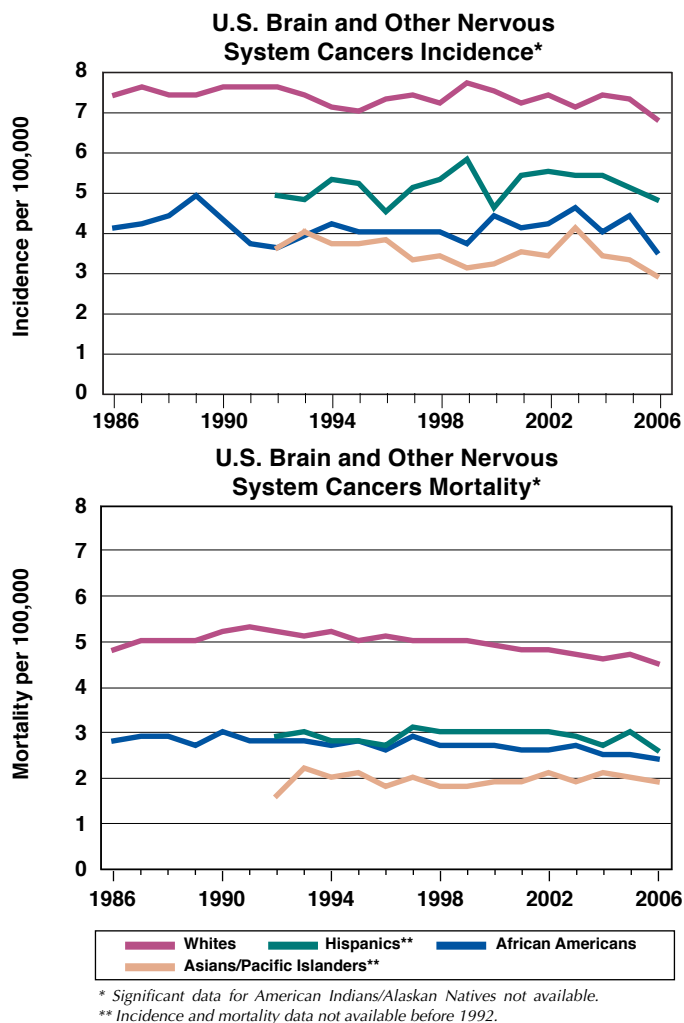
Incidence and Mortality Rate Trends

It is estimated that 51,410 new cases of primary nonmalignant and malignant brain and central nervous system (CNS) tumors were diagnosed in the United States in 2007; of those, 3,750 were new cases of childhood primary brain and CNS tumors.¹ The incidence and mortality rates for cancers that originate in the brain and CNS have changed little in the past decade. Both incidence and mortality rates are substantially higher for whites than for other racial/ethnic groups. In all racial/ethnic groups, men have higher incidence and mortality rates than women.

Brain tumors are the leading cause of solid tumor cancer death in children; brain and CNS cancers make up approximately 21 percent of all childhood cancers. The incidence rate of brain and CNS cancers in children has risen slightly over the past three decades, but the death rate has dropped slightly over this period.

Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at <http://seer.cancer.gov/>.

¹Central Brain Tumor Registry of the United States (<http://www.cbtrus.org/factsheet/factsheet.html>).

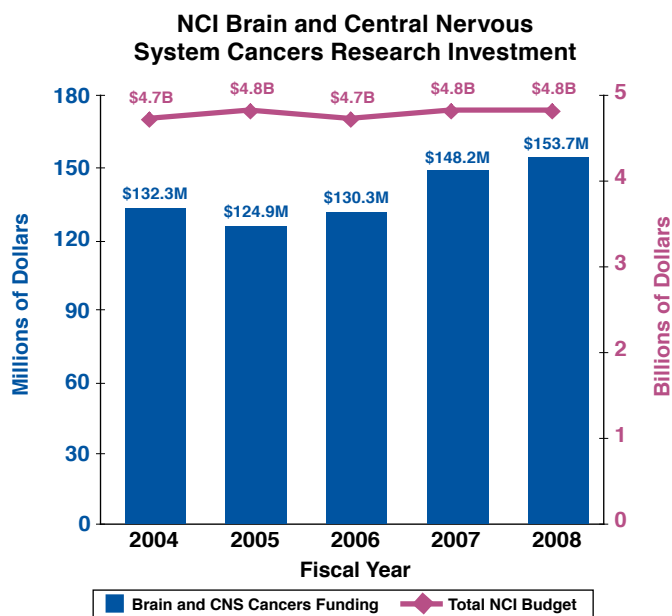


Trends in NCI Funding for Brain and Central Nervous System Cancers Research

The National Cancer Institute's (NCI) investment² in brain and CNS cancers research has increased from \$132.3 million in fiscal year 2004 to \$153.7 million in fiscal year 2008.

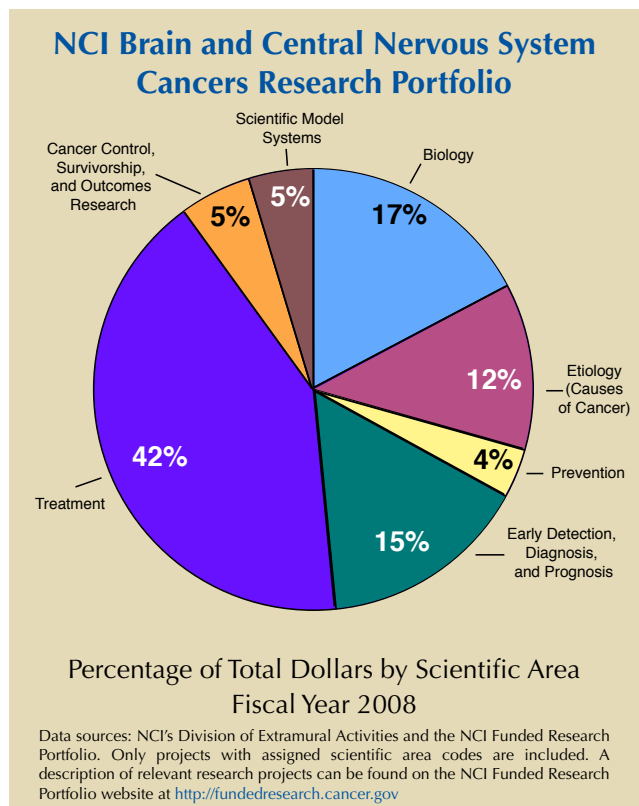
Source: NCI Office of Budget and Finance (<http://obf.cancer.gov>).

²The estimated NCI investment is based on funding associated with a broad range of peer-reviewed scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see <http://www.nih.gov/about/>.



Examples of NCI Activities Relevant to Brain and Central Nervous System Cancers

- Five brain tumor-specific **Specialized Programs of Research Excellence (SPOREs)** are moving results from the laboratory to the clinical setting. <http://spores.nci.nih.gov/current/brain/index.htm>
- The **Tumor Microenvironment Network (TMEN)** is exploring the role of the microenvironment, the cells and blood vessels that feed a tumor cell, in tumor initiation and progression. Network investigators are studying the interaction between brain tumors and the brain microenvironment. <http://tmen.nci.nih.gov/>
- The **Cancer Genome Atlas (TCGA)** is assessing the feasibility of systematically identifying the major genomic changes involved in cancer using state-of-the-art genomic analysis technologies. Brain cancer is one of the first cancer types to be studied in the TCGA pilot phase. <http://cancergenome.nih.gov/>
- The **Glioma Molecular Diagnostic Initiative (GMDI)** is developing a comprehensive molecular classification system for human gliomas. The molecular, genetic, and clinical data from GMDI will be housed in **REMBRANDT (REpository of Molecular BRAin Neoplasia DaTa)**, a publicly accessible database with online analysis tools. <http://rembrandt.nci.nih.gov/>
- The **Neuro-Oncology Branch** is a joint program of NCI and the National Institute of Neurological Disorders and Stroke. The branch supports the



development of novel experimental therapeutics for adults and children with central nervous system tumors. <http://home.ccr.cancer.gov/nob/>

- The **What You Need to Know About™ Brain Tumors** booklet provides information about diagnosis, treatment, and supportive care for primary brain tumors. Information specialists can also answer questions about cancer at 1-800-4-CANCER. <http://www.cancer.gov/cancertopics/wyntk/brain>
- The **Brain Tumor Home Page** provides up-to-date information on brain cancer treatment, prevention, genetics, causes, and other topics. <http://www.cancer.gov/brain/>

Selected Advances in Brain and Central Nervous System Cancers Research

- Researchers discovered **42 genes associated with an aggressive type of brain cancer**, glioblastoma multiforme. <http://www.ncbi.nlm.nih.gov/pubmed/18772396>
- A **new molecular-based classification system** will likely improve diagnosis and enable personalized treatment of gliomas. http://home.ccr.cancer.gov/inthejournals/li_fine.asp
- A study uncovered how **mutations in the IDH1 gene promote** brain tumor development. <http://www.ncbi.nlm.nih.gov/pubmed/19359588>
- The Cancer Genome Atlas project identified **gene mutations and alterations in core signaling pathways** in brain cancer. <http://www.ncbi.nlm.nih.gov/pubmed/18772890>